

Ultra-short InP-based polarization rotator

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Asymmetric rib waveguides have been employed to produce compact ($\sim 300\mu\text{m}$) polarization converters [1]. We extend this idea and use slanted slots deeply etched in the middle of the ridge waveguide in the direction of light propagation (Fig. 1 a). This allows us to achieve efficient polarization conversion over very short (several micron long) devices. We report polarization conversion of about 90% (Fig. 1 b) utilizing 2- μm long deeply etched 1-D photonic crystals in InP-based material.

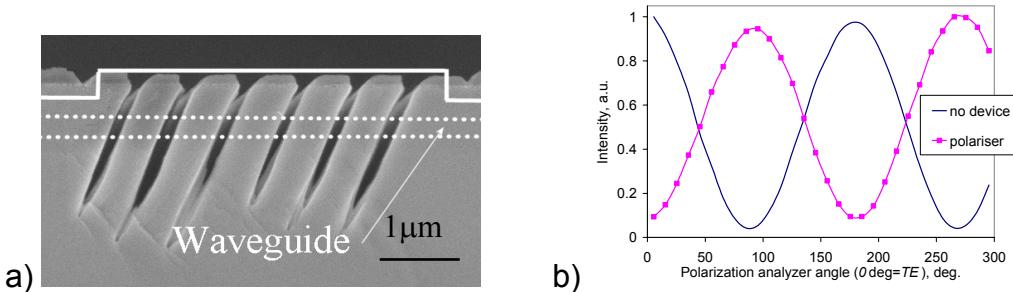


Fig. 1. a) SEM image of deeply etched 100-nm wide slanted slots. Bold white line schematically represents the cross section of shallow etched ridge waveguide; b) intensity of the output-light versus polarization analyzer angle.

- [1] H. El-Refaei, D. Yevick, and T. Jones, *IEEE J. Lightwave Technol.*, **22**, 1352 (2004).